

Amendments to the Claims

The following listing of claims will replace all prior versions and listings of claims in the application.

1. (Currently Amended) A method for generating stimuli by an auditory prosthesis, including an array of stimulation ~~devices-electrodes~~, in response to an incoming acoustic signal, the method including:

dividing the incoming acoustic signal to obtain a plurality of filter band signals, each filter band corresponding to a ~~determining-stimulation devices-electrode~~ to be activated within the array and ~~determining~~ activation times for those stimulation devices-electrodes using a base stimulation strategy; and ~~deriving temporal adjustments for each stimulation electrode using a latency function, wherein for a particular stimulation electrode, the latency function depends on filter band signal amplitudes of a plurality of surrounding filter bands, and filter band frequencies of the plurality of surrounding filter bands, relative to the filter band frequency of the particular stimulation electrode;~~

applying [the][a] temporal adjustment[s] to the activation times of the stimulation electrodes[e], said temporal adjustment being derived from the amplitudes of a plurality of stimuli to be applied by proximate stimulation devices, such that activation of stimulation ~~devices electrodes representing corresponding to~~ lower-amplitude components filter band signals of the signal is ~~are~~ delayed relative to activation of ~~a proximate device representing stimulation electrodes corresponding to~~ [a] higher-amplitude component filter band signals of the signal;
and

generating a stimulus using one or more of the stimulation devices-electrodes.

2. (Original) A method according to claim 1, wherein the auditory prosthesis is implantable in a cochlea and forms a linear array.

3. (Currently Amended) A method according to claim 1, wherein the auditory prosthesis stimulation ~~device-electrode~~ array is implantable in an auditory brain and forms a grid mapped to the form of a linear array.

4. (Canceled)

5. (Currently Amended) A method according to claim 1, wherein the activation time of each stimulation device is temporally adjusted according to a latency function whereby, for a particular device stimulation electrode includes, a temporal adjustment is applied if a weighted sum of the amplitudes of a plurality of surrounding filter band signal amplitudes and a temporal adjustment is made if said weighted sum proximate stimuli exceeds the an amplitude of the stimuli to be applied by the particular device stimulation electrode.

6. (Canceled)

7. (Currently Amended) A method according to claim 5, wherein the latency function $f_x(\vec{x})$ is defined by:

$$f_x(\vec{x}) = \min(0, -2aA_x + a \sum_{\substack{y=1 \\ y \neq x}}^N g(y)A_y)$$

where A_x is the amplitude of a stimulation to be applied by a device stimulation electrode x , a is a scaling factor, N is the number of devices surrounding filter bands to which the latency function is constrained, and $g(y)$ is amplitude of a stimuli a weighting factor to be applied to the amplitude of stimulation to be applied by stimulation electrode A_y by device y .

8. (Currently Amended) A method according to claim 1, wherein the stimulation device electrode array of the auditory prostheses requires non-simultaneous stimulation to be applied by the array of stimulation devices electrodes, the method further including:

if there is temporal contention between stimulation to be applied by different devices electrodes of the array, discarding one or more lower-amplitude stimuli in favour-favor of a higher-amplitude stimulus.

9. (Currently Amended) A method according to claim 1, wherein the auditory prostheses requires non-simultaneous stimulation to be applied by the array of stimulation devices electrodes, the method further including:

if there is temporal contention between stimulation to be applied by different ~~devices~~ stimulation electrodes of the array, applying a further temporal delay to one or more lower-amplitude stimuli by one or more stimulation slots in ~~favour-favor~~ of a higher-amplitude stimulus.

10. (Canceled).

11. (Currently Amended) A method according to claim 1, wherein the array of ~~stimulation devices~~ auditory prosthesis includes one or more drug delivery units for delivering drugs to a user at predetermined locations.

12. (Original) A method according to claim 11, wherein the drug delivery units are fluidic microchannels.

13. (Currently Amended) A system for generating stimuli in response to an incoming acoustic signal for application[s] by an auditory prosthesis including an array of stimulation ~~devices~~ electrodes, including:

a stimulator unit for selectively activating stimulation ~~devices~~ electrodes in the array; and

a processor for processing received sound signals and controlling the operation of the stimulator unit using a method including:

dividing the incoming acoustic signal to obtain a plurality of filter band signals, each filter band corresponding to a ~~determining~~ stimulation electrodes to be activated within the array and; determining activation times for those stimulation ~~devices~~ electrodes using a base stimulation strategy; and deriving temporal adjustments for each stimulation electrode using a latency function, wherein for a particular stimulation electrode, the latency function depends on: filter band signal amplitudes of a plurality of surrounding filter bands and filter band frequencies of the plurality of surrounding filter bands, relative to the filter band frequency of the particular stimulation electrode;

applying ~~[the]~~ [a] temporal adjustment[s] to the activation times of the stimulation electrodes, said temporal adjustment being derived from the amplitudes of a plurality of stimuli to be applied by proximate stimulation devices, such that activation of stimulation ~~devices~~ electrodes representing corresponding to lower-amplitude ~~components~~ filter band signals of the signal ~~is~~ are delayed relative to activation of a ~~proximate device~~ stimulation electrodes corresponding to [a] higher-amplitude ~~component~~ filter band signals of the signal.

14-15. (Canceled)

16. (Currently Amended) A processor for use in a system for generating stimuli in response to an incoming acoustic signal for application by an auditory prosthesis including an array of stimulation ~~devices-electrodes~~, the system including a stimulator unit for selectively activating stimulation ~~devices-electrodes~~ in the stimulation ~~device-electrode~~ array, the processor including digital signal processing means for processing received sound signals and controlling the operation of the stimulator unit using a method including:

dividing the incoming acoustic signal to obtain a plurality of filter band signals, each filter band corresponding to a ~~determining stimulation devices-electrodes~~ to be activated within the array and; ~~determining~~ activation times for those stimulation devices electrodes using a base stimulation strategy; and ~~deriving temporal adjustments for each stimulation electrode using a latency function, wherein for a particular stimulation electrode, the latency function depends on: filter band signal amplitudes of a plurality of surrounding filter bands and filter band frequencies of the plurality of surrounding filter bands, relative to the filter band frequency of the particular stimulation electrode;~~

applying [the] [a] temporal adjustment[s] to the activation times of the stimulation electrodes, said temporal adjustment being derived from the amplitudes of a plurality of stimuli to be applied by proximate stimulation devices, such that activation of stimulation ~~devices electrodes~~ representing corresponding to lower-amplitude ~~components filter band signals of the signal is~~ are delayed relative to activation of ~~a proximate device representing stimulation electrodes corresponding to [a] higher-amplitude component filter band signals of the signal.~~

17. (Currently Amended) A system for generating stimuli for application[s] by an auditory prosthesis as claimed in claim 13 wherein the ~~activation time of each stimulation device is temporally adjusted according to a latency function whereby,~~ for a particular stimulation electrode device includes, ~~a temporal adjustment is applied if the [a] weighted sum of the amplitudes of a plurality of surrounding filter bands and a temporal adjustment is made if said weighted sum proximate stimuli exceeds the weighted amplitude of the stimuli to be applied by the particular device stimulation electrode.~~

18. (Canceled)

19. (Currently Amended) A system for generating stimuli for application[s] by an auditory prosthesis as claimed in claim 17, wherein the latency function $f_x(\vec{x})$ is defined by:

$$f_x(\vec{x}) = \min(0, -2aA_x + a \sum_{\substack{y=1 \\ y \neq x}}^N g(y)A_y)$$

where A_x is the amplitude of a stimulation to be applied by a device-stimulation electrode x , a is a scaling factor, N is the number of devices-surrounding filter bands to which the latency function is constrained, and $g(y)$ is amplitude of a stimuli a weighting factor to be applied to the amplitude of electrode A_y by device- x .

20. (Currently Amended) A system for generating stimuli for application[s] by an auditory prosthesis as claimed in claim 13, wherein the stimulation device-electrode array of the auditory prostheses requires non-simultaneous stimulation to be applied by the array of stimulation devices-electrodes, and wherein the processor is further configured to discard one or more lower-amplitude stimuli in favour-favor of a higher-amplitude stimulus, in the event that there is temporal contention between stimulation to be applied by different devices-electrodes of the array.

21. (Currently Amended) A system for generating stimuli for application[s] by an auditory prosthesis as claimed in claim 13, wherein the auditory prostheses requires non-simultaneous stimulation to be applied by the array of stimulation devices-electrodes, and the processor is further configured to apply a further temporal delay to one or more lower-amplitude stimuli by one or more stimulation slots in favour-favor of a higher-amplitude stimulus, in the event that there is temporal contention between stimulation to be applied by different device-stimulation electrode of the array.

22. (Canceled).

23. (Currently Amended) A system for generating stimuli for application[s] by an auditory prosthesis as claimed in claim 13 wherein the array of stimulation ~~devices-electrodes~~ includes one or more drug delivery units for the delivery of drugs to a user at predetermined locations.

24. (Currently Amended) A system for generating stimuli for application[s] by an auditory prosthesis as claimed in claim 13 wherein the auditory prosthesis is implantable in a cochlea and forms a linear array.

25. (Currently Amended) A system for generating stimuli for application[s] by an auditory prosthesis as claimed in claim 13 wherein the auditory prosthesis stimulation ~~device-electrode~~ array is implantable in an auditory brain and forms a grid mapped to the form of a linear array.

26. (Currently Amended) A system for generating stimuli for application[s] by an auditory prosthesis as claimed in claim 13 wherein the processor is further configured to apply the temporal adjustment to the activation time of stimulation ~~device-electrode~~ derived from the amplitudes of stimuli to be applied by proximate stimulation ~~devices-electrodes~~.

27. (Canceled).

28. (Currently Amended) A processor for use in a system for generating stimuli for application by an auditory prosthesis as claimed in claim 16, wherein the processor is further configured to discard one or more lower-amplitude stimuli in ~~favour-favor~~ of a higher-amplitude stimulus, in the event that there is temporal contention between stimulation to be applied by different ~~device-stimulation electrode~~ of the array.

29. (Currently Amended) A processor for use in a system for generating stimuli for application by an auditory prosthesis as claimed in claim 16, wherein the processor is further configured to apply a further temporal delay to one or more lower-amplitude stimuli by one or more stimulation slots in ~~favour-favor~~ of a higher-amplitude stimulus, in the event that there is temporal contention between stimulation to be applied by different ~~device-stimulation electrode~~ of the array.

30. (Currently Amended) A system for generating stimuli for applications by an auditory prosthesis as claimed in claim [22][13], wherein the stimulator unit acts to activate the one or more electrodes by selectively applying stimulation pulses to the electrodes.

31. (Previously Presented) A system according to claim 23 wherein the stimulator unit includes a drug storage device and a drug delivery pump for delivering drugs stored in the drug storage device through the drug delivery units to a user.